US LHC Accelerator Project — Baseline Change Request

BCR Number 056
WBS 1.1.4
Title Change in ETC for IR Absorbers
Change Control Level 2
Originator Joseph E. Rasson
Date I July 2003

Description of change

The purpose of this BCR is to re baseline the estimate to complete (ETC) for the IR Absorber task, WBS 1.1.4, taking account of the latest bottoms up cost estimate completed in June 2003. For purposes of this BCR the ETC covers the period from 1 June 2003 to completion, 31 October 2003. The last BCR for this project was submitted in June 2001 at which time the ETC was $2,567k including OH and G&A. The project has exhausted all available funds as of June 2003. The ETC for all work remaining is $284k including OH and G&A which is approximately equal to the difference between EAC and BAC.

There is no change in deliverable as a result of this BCR. The increase in the EAC is due to unexpected fabrication delays and change of scope resulting from configuration change requests from CERN. The major cost elements contributing to BCR 056 are:

WBS 1.1.4.1 TAS/TAN Fabrication
The TAS/TAN fabrication includes beam tubes and shields fabricated at outside vendors and assembly and test activities at LBNL's facilities. The TAS fabrication, assembly and test activities are 99% complete; and shipping of the TAS to CERN is scheduled in July 2003. The remaining work in WBS 1.1.4.1 is the final assembly and bakeout of the TAN system which is scheduled for shipping to CERN in September 2003. WBS 1.1.4.1 ETC is $95k and the EAC is $2,911k. This BCR increases the fabrication cost by $153k.

WBS 1.1.4.2 Shipping
TAS/TAN shipping cost was updated based on a revised packing and shipping plan. This BCR reduces the shipping cost by $69k.

WBS 1.1.4.3 EDIA
The EDIA ETC is $69k to cover all engineering effort through the completion of the project. This BCR increases the EDIA cost by $195k.

Reason for change

The reason for the change is bring the project tracking cost and schedule machinery into line with the present ETC so the variance analyses from now to completion are more meaningful. The IR Absorber task has not been re baselined since June 2001.

The cost drivers for the bottoms up ETCs as of June 2003 were examined in detail at the quarterly cost review meeting held on 26 June 2003. The increase in EDIA and fabrication costs was primarily due to two main factors. First, TAS/TAN configuration change requests from CERN resulted in fabrication and EDIA cost increase of $95k as detailed in the Design Changes Notices nos. LHC_DCN_TAN-001 and LHC_DCN_TAS-001. The second main reason is technical difficulties encountered during the beam tube e-beam weld process and the assembly and testing of the absorbers. The technical problems resulted in a schedule slippage that, in turn, resulted in EDIA cost increase.

The remaining ETC is the result of a detailed working schedule based on experience gained from completing the TAS assembly and test; and the successful completion of one TAN e-beam weld

operation. The TAS shipping cost is based on a fixed price subcontract issued to HASS Industries, Inc. a local crating and shipping company. The TAN shipping cost is based on a revised crating and shipping plan and a vendor quote in response to a RFI.

Impact on schedule

There is no schedule impact. The TAS and TAN are scheduled for shipping to CERN in June and September 2003 respectively. The EDIA effort is scheduled to conclude in October 2003.

Impact on other sub-systems

None.

Impact on cost

BCR056 cost details are shown below. Table 1 shows the ETC in as spent dollars including GA and breaks out the costs by material and labor.

Table 1: Absorbers in ASk$, all ETC tasks occur in FY03.

WBS	DESCRIPTION	Current BAC	ACWP	BCR56 Jun03 ETC	EAC	Delta (EAC-BAC)
1.1.4	ABSORBERS	4,319.6	4,370.1	237.3	4,607.4	-287.8
1.1.4.1	FABRICATION	2,757.9	2,816.1	95.0	2,911.1	-153.2
1.1.4.1.1	IR NEUTRAL ABSO	1,263.5	1,284.1	-	1,284.1	-20.6
1.1.4.1.2	IR QUAD ABSORBE	711.5	721.1	-	721.1	-9.6
1.1.4.1.5	INSTRUMENTATION	194.7	194.4	-	194.4	0.3
1.1.4.1.6	ABSORBER ASSEMBLY	430.8	444.3	22.8	467.1	-36.3
1.1.4.1.7	ABSORBER TEST	157.4	172.2	72.2	244.4	-87.0
1.1.4.2	Shipping	155.1	12.6	73.4	86.0	69.1
1.1.4.2.1	NEUTRAL ABSORBER	114.3	-	59.4	59.4	54.9
1.1.4.2.2	IR QUAD ABSORBER	30.0	1.8	14.0	15.8	14.2
1.1.4.2.6	INSTRUMENTATION	10.7	10.7	-	10.7	0.0
1.1.4.3	EDIA	1,349.4	1,475.3	68.9	1,544.2	-194.8
1.1.4.3.1	IR NEUTRAL BEAM	609.7	659.8	68.9	728.7	-119.0
1.1.4.3.3	QUAD ABSORBER	507.7	583.6	-	583.6	-76.0
1.1.4.3.6	INSTRUMENTATION	231.9	231.9	-	231.9	-0.1
1.1.4.4	Instrumentation	57.3	66.2	-	66.2	-8.9
Total Direct		**4,319.6**	**4,370.1**	**237.3**	**4,607.4**	**-287.8**
[OH]	OVERHEAD	144.8	122.7	4.7	127.4	17.4
[G&A]	GEN & ADMIN	533.3	505.3	41.8	547.1	-13.8
Total Cost		**4,997.7**	**4,998.1**	**283.8**	**5,281.9**	**-284.2**

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Other impacts (ES&H, etc.)

None.

Change Control Board recommendation (if required)

Approvals

Joseph Rasson WBS Level 3 Manager	7/31/03 Date
Joseph Rasson Laboratory Project Manager	7/31/03 Date
James Strait Change Control Board Chair	7/31/03 Date
James Strait US LHC Accelerator Project Manager	7/31/03 Date
Peje J. Czapla (for J. Yeck) DOE LHC Project Manager	8/1/03 Date
Director, DOE Division of High Energy Physics	Date